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Bridge technique for hemifacial spasm with vertebral artery involvement: 2-Dimensional operative video

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ABSTRACT

Microvascular decompression for hemifacial spasm (HFS) associated with the vertebral artery (VA) is more challenging than that for small arteries. Atherosclerotic VA and tortuous VA are associated with a low success rate and high incidences of complications. Artery relocation employing a Teflon sling is helpful for small arteries. However, a different decompression technique should be considered in VA-related HFS due to the stiffness of the offending artery. With our simple decompression technique providing a secure transposition that can be performed even in the narrow cistern, a rigid Teflon bar is inserted to hold up all offending vessels between the pontine surface and the cerebellar flocculus (the bridge technique). This simple technique easily creates a free space over the root entry zone (REZ), reduces surgical manipulation compared to conventional artery relocation with a Teflon sling, and provides more secure nerve decompression than inserting Teflon pledgets on the REZ. The critical factors for successfully performing the bridge technique are using a rigid Teflon bar that can hold the rebound force of the VA and a length appropriate to generate a free space over the REZ between the pons and the cerebellar flocculus. In this video, we demonstrate our bridge technique for VA-related HFS and discuss the advantages and disadvantages of this novel approach.

1. Background

Small arteries, such as the anterior inferior cerebellar artery (AICA) and the posterior inferior cerebellar artery (PICA), are frequently observed in the vertebral artery (VA)-involve neurovascular compression and require simultaneous transposition. However, microvascular decompression (MVD) for hemifacial spasm (HFS) associated with the vertebral artery (VA) is more challenging than that for merely small arteries.[1,2] Atherosclerotic VA and tortuous VA are associated with a low success rate and high incidences of complications.[3,4] Artery relocation employing a Teflon sling is helpful for small arteries. However, a different decompression technique should be considered in VA-related HFS due to the stiffness of the offending artery.[5]

2. Case description

A 55-year-old man had suffered left-sided hemifacial spasms for over three years. Clonazepam administration was not effective. Botulinum toxin injection reduced the symptoms, but repeat injections were required to maintain spasm-free status. He was referred to our hospital for surgical treatment five years after the onset. Preoperative MRI shows the left vertebral artery to be located very close to the root exit zone of the facial nerve. Fast imaging employing steady-state acquisition (FIESTA) (0.8-mm-thick) revealed the AICA to exert direct compression on the root exit zone (REZ). The offending vessels were identified as the AICA and the overlying VA. He underwent MVD, and the VA and AICA were elevated, with a suction tube, away from the REZ, followed by inserting a Teflon bridge to maintain this elevation. Postoperative CT and MRI showed secure decompression of the facial nerve and that elevations of the VA and the AICA from the brain stem had been maintained. The patient was spasm-free immediately after surgery and has held this state for 24 months postoperatively.

3. Conclusion

With our simple decompression technique providing a secure transposition that can be performed even in the narrow cistern, a rigid Teflon bar is inserted to hold up all offending vessels between the pontine

Abbreviations: ABR, auditory brainstem evoked response; AICA, anterior inferior cerebellar artery; FIESTA, fast imaging employing steady-state acquisition; REZ, root exit zone; VA, vertebral artery.

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Credit author statement

Conception and design: Goto. Drafting the article: Goto. Treating the patients: Goto and Inoue. Analyzing the imaging data: Goto and Inoue. Critically revising the article: Inoue. All authors read and approved the final manuscript.

Conflict of interest

The authors have no conflicts of interest to declare.

Disclosure of funding

None.

Ethics statement

All data identifying the patients were anonymized. This report was written under the strict rules of the ethicss committee of Koto Memorial Hospital, Japan. The patient consented to the procedure. Written informed consent was obtained from all individual participants and their first-degree relatives included in this study.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.wnsx.2023.100157.

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